

COURSE OUTCOMES

DEPARTMENT OF INFORMATION TECHNOLOGY



COLLEGE OF ENGINEERING ROORKEE
ACADEMIC YEAR – 2020-21

Preface

This document presents a compilation of the Course Outcomes (COs) for all subjects taught in a program leading to degree in **B. Tech (Information Technology)**. The COs outline a few (about 5) significant learning outcomes that a student is expected to learn while studying the subject. Besides, each Course Outcome is associated with one or more of the 5 Blooms Taxonomy Levels as listed below:

Bloom's Levels	Bloom's Taxonomy
1	Remember and Understand (Referred to as 'Understand' in all Course outcomes)
2	Apply
3	Analyze
4	Evaluate
5	Create

At the College of Engineering Roorkee (COER), the curriculum is prescribed by the affiliating University. Efforts are made to make the teaching learning process Outcome Based Education (OBE) oriented. Outcome-based education offers a powerful managing technical education to be effective in its goals.

The OBE process started at COER systems in 2018 and went through evolution phases. This document presents consolidated Course Outcomes (CO) of the all courses offered in the academic year 2019-20. For this purpose, Course Outcome (CO) committees were formed, which consisted Dean Academics, Head of the Department and a senior faculty members of the respective departments. They defined COs for each course by referring to contents of the respective syllabus. Bloom's Taxonomy levels were also assigned for each identified CO.

Teaching Scheme: B.Tech. (Information Technology)

Semester: 2nd

S. No	Subject's Title	Subject Code	L	T	P	Credits
1	ProgrammingforProblemSolving	BCST 201	3	1	0	4
2	ProgrammingforProblemSolving Lab	BCSP 201	0	0	2	1

Semester: 3rd

S. No	Subject's Title	Subject Code	L	T	P	Credits
1	Mathematics-III	BAST 301	3	1	0	4
2	Discrete Structure	BITT 302	3	1	0	4
3	Data Structure	BITT 303	3	1	0	4
4	Digital Electronics	BECT 303	3	1	0	4
5	Object Oriented Programming & Methodology	BITT 305	3	1	0	4
6	Computer Workshop (Using Python)	BITP 306	0	0	2	1
7	Data Structure Lab	BITP 303	0	0	2	1
8	Digital Electronics Lab	BECP 303	0	0	2	1
9	Object Oriented Programming & Methodology Lab	BITP 305	0	0	2	1

Semester: 4th

S. No	Subject's Title	Subject Code	L	T	P	Credits
1	Energy & Environmental Engineering	BCET 401	3	1	0	4
2	Database Management Systems	BITT 402	3	1	0	4
3	Software Engineering	BITT 403	3	0	2	4
4	Computer Organization & Architecture	BITT 404	3	1	0	4
5	Theory of Automata & Formal Languages	BITT 405	3	1	0	4
6	Universal Human Values - 2	BHUT 401	2	1	0	3
7	Database Management Systems Lab	BITP 402	0	0	2	1
8	Computer Organization & Architecture Lab	BITP 404	0	0	2	1

Semester: 5th

S. No	Subject's Title	Subject Code	L	T	P	Credits
1	Operating System	BCST 501	3	1	0	4
2	Computer Networks	BCST 502	3	1	0	4
3	Design & Analysis of Algorithms	BCST 503	3	1	0	4
4	Departmental Elective-I (Java programming)	BITT 504	3	1	0	4
5	Open Elective I (Principles of Programming Languages)	BOIT 505	3	1	0	4
6	Operating System Lab	BCSP 501	0	0	2	1
7	Computer Networks Lab	BCSP 502	0	0	2	1
8	Design & Analysis of Algorithms Lab	BCSP 503	0	0	2	1
9	Departmental lab (Java)	BITT 506	0	0	2	1

Semester: 6th

S. No	Subject's Title	Subject Code	L	T	P	Credits
1	Microprocessors & Applications	BCST 601	3	1	0	4
2	Computer Graphics & Multimedia	BITT 602	3	1	0	4
3	Data Analytics	BCST 603	3	1	0	4
4	Departmental Elective (Compiler Design)	BITT 604	3	1	0	4
5	Open Elective (Machine Learning)	BOIT 605	3	1	0	4
6	Microprocessors & Applications Lab	BCSP 601	0	0	2	1
7	Computer Graphics & Multimedia Lab	BITP 602	0	0	2	1
8	Data Analytics Lab	BCSP 603	0	0	2	1
9	Open Source Software Lab	BITP 606	0	0	2	1

Semester: 7th

S. No	Subject's Title	Subject Code	L	T	P	Credits
1	System Administration	TIT 701	3	1	0	4
2	Data Warehousing & Mining	TIT 702	3	1	0	4
3	Information Security	TIT 703	3	1	0	4
4	Elective-I (Multimedia Communication & Design)	TIT 075	3	1	0	4
5	Open Elective (EDP)	TOE 05	3	1	0	4
6	System Administration Lab	PIT 751	0	0	2	1
7	Project	PIT 757	0	0	4	2
8	Industrial Interaction	PIT 758	0	0	2	1

Semester: 8th

S. No	Subject's Title	Subject Code	L	T	P	Credits
1	Software Architecture	TIT 801	3	1	0	4
2	Cryptography & Network Security	TIT 802	3	1	2	5
3	Elective –II (IT Infrastructure Management)	TIT 081	3	1	0	4
4	Elective –III (Distributed Computing)	TIT 087	3	1	0	4
5	Cryptography & Network Security Lab	PIT 852	0	0	2	1
6	Project	PIT 857	0	0	6	3

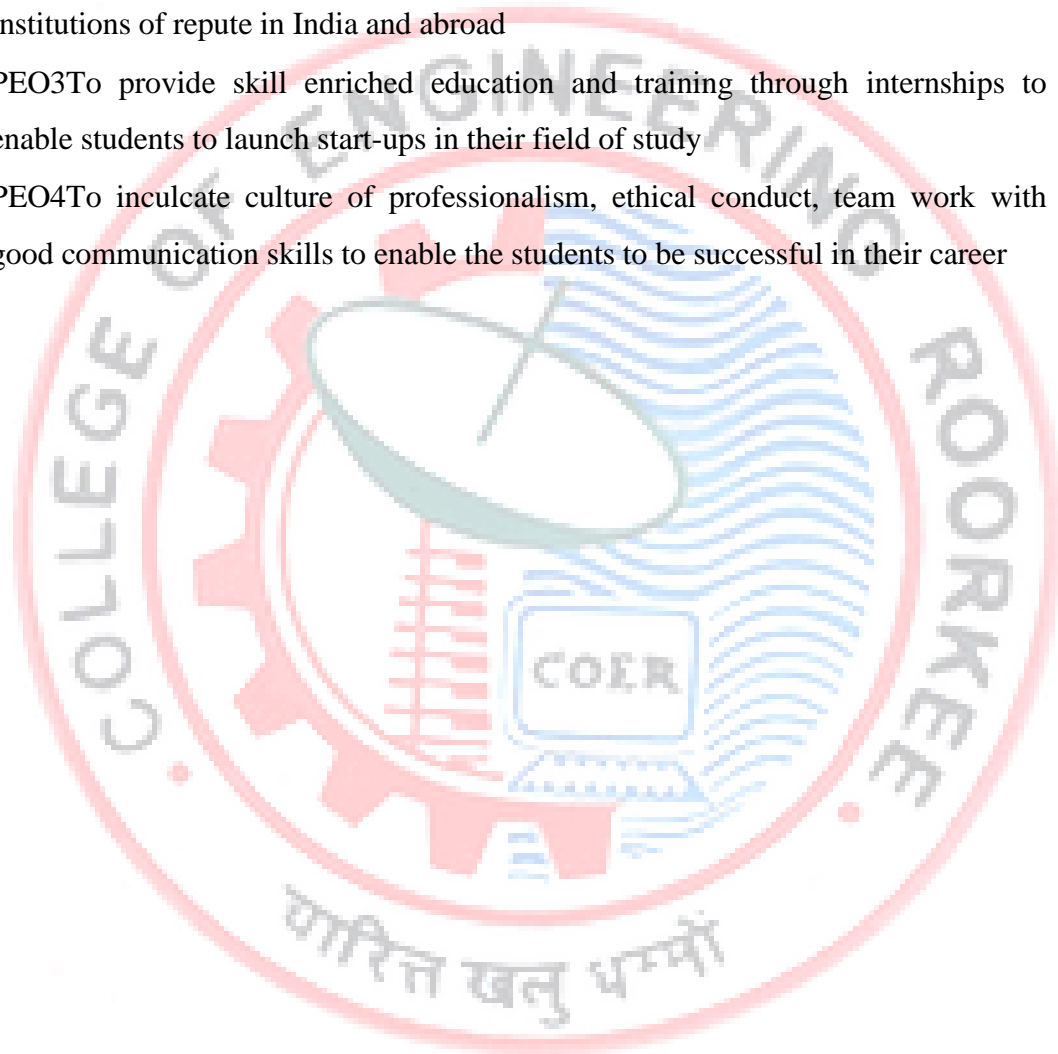
Program Educational Objectives (PEOs)

PEO1 To equip the students with lifelong skills so that they can work and contribute to the infrastructural development projects of the public and private sectors

PEO2 To provide research oriented education with knowledge of state-of-art analytical and experimental tools to enable students to pursue higher studies in institutions of repute in India and abroad

PEO3 To provide skill enriched education and training through internships to enable students to launch start-ups in their field of study

PEO4 To inculcate culture of professionalism, ethical conduct, team work with good communication skills to enable the students to be successful in their career



Program Specific Outcomes (PSOs)

PSO1 The students will acquire comprehensive understanding of concepts, analysis, operation and performance of all major aspects of information technology such as computer networks, information security, operating system, algorithms, Human computer interaction, data analytics, artificial intelligence and applications, cloud computing and programming languages

PSO2 The students will have knowledge of advanced programming languages and analytical tools to deliver solution to the end users.

PSO3 The student will have rigorous training in experimental support to the theoretical concepts which will lead to strengthening their research work



Program Outcomes (POs)

PO1 Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2 Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3 Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4 Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5 Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6 The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7 Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO8 Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

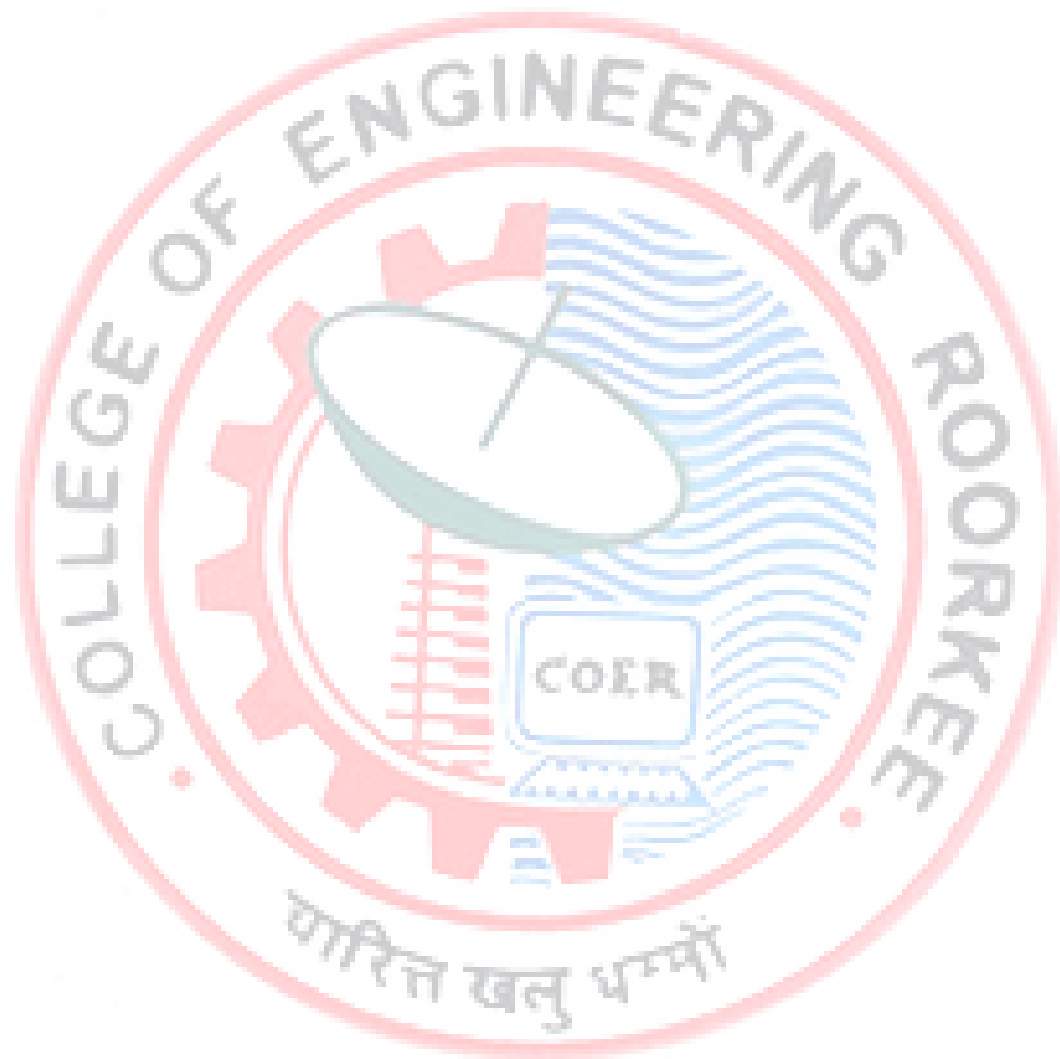
PO9 Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10 Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO11 Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as

a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12 Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.



CourseName:ProgrammingforProblemSolving

CourseCode:BCST201

The student will be able to:

COs	COURSE OUTCOMES	BLOOM'S TAXONOMY	BLOOM'S LEVEL (B.L)
CO-1	Formulate simple algorithms for arithmetic and logical problems.	Understand, Create	B.L-1,5
CO-2	Remember the basics of Computer Fundamentals of Computer History	Understand	B.L-1
CO-3	Translate the algorithms to programs (in C language). Also to test and execute the programs and correct	Analyze, Evaluate	B.L-3,4
CO-4	Implement conditional branching, iteration and recursion.	Apply	B.L-2
CO-5	Analyze the problem for its decomposition into functions and synthesize a complete program using divide and conquer approach.	Analyze	B.L-3

CourseName:MathematicsIII

CourseCode:BAST-301

The student will be able to:

COs	COURSE OUTCOME	BLOOM'S TAXONOMY	BLOOM'S LEVEL (B.L)
CO-1	Learn the concept of Fourier Integral, Fourier transform, Inverse Fourier transform, Laplace transform, Inverse Laplace transform, Numerical and statistical methods /Formulae to	Understand	B.L-1
CO-2	Learn the Properties of the Fourier transform, Inverse Fourier transform, Laplace transform, Inverse Laplace transform The concept of the roots of algebraic and transcendental equations, interpolation, differentiation, integration, the solution of differential equations (by numerical methods) correlation, regression,	Understand	B.L-1
CO-3	Solve simple one-dimensional heat transfer equations, linear differential equations by using Fourier and Laplace transform respectively.	Apply	B.L-2
CO-4	Analyze the convolution theorems, Skewness, Kurtosis, Curve Fitting, Correlation, Rank correlation and Regression Analysis.	Analyze	B.L-3
CO-5	Evaluate the Fourier and Laplace transform of the functions, roots of algebraic and transcendental equations, polynomials by interpolation methods, differentiation, integration, solution of differential equations (by numerical methods) , correlation, regression, moments, skewness, kurtosis and curve fitting of any tabulated data.	Evaluate	B.L-4

CourseName:DiscreteStructure

CourseCode:BITT-302

The student will be able to

COs	COURSE OUTCOMES	BLOOM'S TAXONOMY	BLOOM'S LEVEL (B.L)
CO-1	Understand the basic principles of sets, relations and functions and determine their properties.	Understand, Analyze	B.L-1,3
CO-2	Apply deductive logic and prove the solution of a given problem based on logical inference	Apply, Evaluate	B.L-2,4
CO-3	Analyze and classify a given algebraic structure.	Analyze	B.L-3
CO-4	Evaluate the given problem using deductive logic and prove the solution based on logical inference	Evaluate	B.L-4
CO-5	Design a graph network for the given problem and solve with techniques of graph theory.	Create	B.L-5

CourseName:DataStructure

CourseCode:BITT-303

The student will be able to

COs	COURSE OUTCOMES	BLOOM'S TAXONOMY	BLOOM'S LEVEL (B.L)
CO-1	Select appropriate data structures as applied to specified problem definition.	Understand, Create	B.L-1,5
CO-2	Implement operations like searching, insertion, and deletion, traversing mechanism etc. on various data structures	Apply	B.L-2
CO-3	Students will be able to implement Linear and Non-Linear data structures such as Trees, Hashing etc.,	Analyze, Apply	B.L-2,3
CO-4	Learn and understand various important concepts of Sorting and Searching	Understand	B.L-1
CO-5	Implement appropriate sorting/searching technique for given problem.	Understand	B.L-1

Course Name: DIGITAL ELECTRONICS

Course Code: BECT-303

The student will be able to:

COs	COURSE OUTCOME	BLOOM'S TAXONOMY	BLOOM'S LEVEL (B.L)
CO-1	Represent numerical values in various number systems and perform conversions from one number system to another.	Apply	BL-2
CO-2	Explain operation of logic gates using IEEE/ANSI standard symbols.	Understand	BL-1
CO-3	Perform various minimization techniques in order to reduce the number of gates required to design any logic.	Evaluate	BL-4
CO-4	Analyze digital combinational circuits and sequential logic circuits.	Analyze	BL-3
CO-5	Design digital combinational circuits and sequential logic circuits.	Create	BL-5

CourseName:OOPs
CourseCode:BITT-305

The student will be able to:

COs	COURSE OUTCOMES	BLOOM'S TAXONOMY	BLOOM'S LEVEL (B.L)
CO-1	Explain the ability to apply the knowledge of object oriented concepts for solving system modeling and design problems.	Apply, Analyze	B.L-2,3
CO-2	Specify simple abstract data types and design implementations, using abstraction functions to document them.	Create	B.L-5
CO-3	Recognize features of object-oriented design such as encapsulation, polymorphism, inheritance, and composition of systems based on object identity.	Understand	B.L-1
CO-4	Name and apply some common object-oriented design patterns and give examples of their use.	Apply	B.L-2
CO-5	Design applications with an event-driven graphical user interface.	Create	B.L-5

CourseName:EnergyandEnvironmentalEngineering

CourseCode:BCET-401

Thestudentwillbeableto:

COs	COURSE OUTCOMES	BLOOM'S TAXONOM	BLOOM'S LEVEL (B.L)
CO-1	Understandtheenergyrequirementfordaytodaylife anddescribe variousenergyresources.	Understand	B.L.-1
CO-2	Respond toglobal policyinitiatives and meet the emerging challengeswithsustainabletechnologicalsolutionsinthefield of energyand environment.	Apply	B.L.-2
CO-3	Analyze the life cycle thinking and environmental impacts oftheenergygeneration.	Analyze	B.L.-3
CO-4	Evaluatetheefficiencyofdifferntenergysources(Fossil& alternative)andinter-relationbetweendevelopment activities &theirimpacton the environment.	Evaluate	B.L- 4
CO-5	Plan tohave a balance betweenindustrial growth and environment by forgingalternative energy resources.	Create	B.L.-5

CourseName:DBMS
CourseCode:BITT-402

The student will be able to:

COs	COURSE OUTCOMES	BLOOM'S TAXONOMY	BLOOM'S LEVEL (B.L)
CO-1	Understand underlying concepts of database technologies	Understand	B.L-1
CO-2	Apply the concept of Normalization and design of database without anomalies	Apply	B.L-2
CO-3	Analyze the existing design of a database schema and apply concepts of normalization to design an optimal database.	Analyze, Apply	B.L-5,2
CO-4	Evaluate a transaction processing system, determine the transaction atomicity, consistency, isolation and durability	Evaluate	B.L-3
CO-5	Create a relational database schema in SQL, use SQL to create a non-procedural query, write a stored procedure that deals with parameters and has some control flow, to provide a given functionality	Create	B.L-4

CourseName:SoftwareEngineering
CourseCode:BITT-403

CourseOutcomes:Thestudentwillbeableto:

COs	COURSE OUTCOMES	BLOOM'S TAXONOMY	BLOOM'S LEVEL (B.L)
CO-1	Implement software life cycle models and have a knowledge of different phases of software life cycle	Apply	B.L-2
CO-2	Identify, formulate, review, estimate and schedule complex software projects using principles of mathematics	Understand, Apply	B.L-1,2
CO-3	Create a bug free software with good design and quality by using appropriate techniques and modern engineering I.T tools.	Create	B.L-5
CO-4	Analyze verification validation activities, static, dynamic testing debugging tools and importance of working in teams	Analyze	B.L-3
CO-5	.Classify the requirements and prepare software requirement documents for analyzing the projects	Evaluate	B.L-4

CourseName:ComputerOrganizationandArchitecture

CourseCode:BITT-404

The student will be able to:

COs	COURSE OUTCOMES	BLOOM'S TAXONOMY	BLOOM'S LEVEL (B.L)
CO-1	Understand the evolution of processors, their present technology and inter-process communication.	Understand	B.L-1
CO-2	Apply and Implement fundamental coding schemes. Draw the functional block diagram of a single bus architecture of a computer and describe the function of the instruction execution cycle, RTL interpretation of instructions, addressing	Apply, Create	B.L-2,5
CO-3	Analyze flowchart for Concurrent access to memory and cache coherency in Parallel Processors and describe the	Analyze	B.L-3
CO-4	Evaluate CPU organization and instruction, design a memory module and analyze its operation by interfacing with the CPU.	Evaluate	B.L-4
CO-5	Create the organization for the Control unit, Arithmetic and Logical unit, Memory unit and the I/O unit	Create	B.L-5

CourseName:TheoryofAutomata&FormalLanguage

CourseCode:BITT-405

Thestudentwillbeableto:

COs	COURSE OUTCOMES	BLOOM'S TAXONOMY	BLOOM'S LEVEL (B.L)
CO-1	Explainbasicconceptsinformal languagetheory, grammars,automatatheory,computability theory,and complexity theory	Understand	B.L-1
CO-2	Demonstrateabstractmodelsof computing,includng deterministic (DFA), non-deterministic (NFA),	Evaluate	B.L-4
CO-3	Relate practicalproblems to languages, automata, computability, andcomplexity.	Analyze	B.L-3
CO-4	Applymathematical and formal techniques for solving problems in computer science.	Apply	B.L-2
CO-5	Explaintherelationshipamonglanguageclassesand grammarswith the help of ChomskyHierarchy.	Understand	B.L-1

Course Name: Universal Human Values

Course Code: BHUT 401

The student will be able to

COs	COURSE OUTCOMES	BLOOM'S TAXONOMY	BLOOM'S LEVEL (B.L)
CO 1	To understand the importance of value inputs for personal and professional lives.	Understand	B.L-1
CO 2	To comprehend the difference between values and skills, happiness and the accumulation of physical assets, the Self and the Body, an individual's Intention and Competence.	comprehend	B.L-1
CO 3	To analyze the importance of harmonious relationships built on trust and respect and develop better understanding of personal and professional lives	Analyze	B.L-3
CO 4	Understand the importance of human beings in maintaining societal and environmental equilibrium.	Apply	B.L-1
CO 5	Evaluate ethical and immoral actions, and begin devising a plan to create a happy workplace atmosphere.	Evaluate	B.L-1

CourseName:OperatingSystem
CourseCode:BCST-501

The student will be able to:

COs	COURSE OUTCOMES	BLOOM'S TAXONOMY	BLOOM'S LEVEL (B.L)
CO-1	Understand the important computer system resources and the role of operating system in their management policies and algorithms, storage management policies and memory management and its allocation policies.	Understand, Apply	B.L-1,2
CO-2	Apply the process management policies and scheduling of processes by CPU.	Apply	B.L-2
CO-3	Analyze a system model for deadlock and methods for handling deadlocks	Understand Analyze	B.L-1,3
CO-4	Evaluate the requirement for process synchronization and coordination handled by operating system	Evaluate	B.L-4
CO-5	Create solutions for real life problems or can even create new algorithms using the existing algorithms.	Create	B.L-5

CourseName:ComputerNetwork
CourseCode:BCST-502

The student will be able to:

C Os	COURSE OUTCOMES	BLO OM'S TAXONO MY	BLOO M'S LEVE L (B.L)
C O- 1	Understand basic computer network technology.	Understand	B.L-1
C O- 2	Enumerate the layers of the OSI model and TCP/IP. Explain the function(s) of each Layer.	Apply	B.L-2
C O- 3	Identify the different types of network topologies and protocols.	Analyze	B.L-3
C O- 4	Evaluate and implement the skills of subnetting and routing mechanisms.	Evaluate	B.L-4
C O- 5	Design and implement a peer to peer file sharing application utilizing application layer protocols such as HTTP, DNS, and SMTP and transportation layer protocol.	Create	B.L-5

CourseName:Design&AnalysisofAlgorithm

CourseCode:BCST-503

The student will be able to:

COs	COURSE OUTCOMES	BLOOM'S TAXONOMY	BLOOM'S LEVEL (B.L)
CO-1	Understand the concept of algorithm and how design methods impact the performance of programs.	Understand	B.L-1
CO-2	Apply the appropriate data structure and algorithm design method for a specified application.	Apply	B.L-2
CO-3	Analyze the performance of algorithm using various methods such as Master method, Recurrence Tree method and Substitution method.	Analyze	B.L-3
CO-4	Evaluate problems using algorithm design methods such as the greedy method, divide and conquer, dynamic programming, backtracking and branch & bound.	Analyze, Evaluate	B.L-3,4
CO-5	Using the existing algorithms create solutions for real life problems or can even create new algorithms.	Create	B.L-5

CourseName:JavaProgramming
CourseCode:BITT-504

The student will be able to:

COs	COURSE OUTCOMES	BLOOM'S TAXONOMY	BLOOM'S LEVEL (B.L)
CO-1	Understand structure and model of the	Understand	B.L-1
CO-2	Analyze and develop exception handling	Analyze	B.L-3
CO-3	Design and Develop GUI based applications using AWT & Swing	Create	B.L-5
CO-4	Apply knowledge of JDBC to create programs for establishing database connectivity	Apply	B.L-2
CO-5	Evaluate and Create Network programs	Evaluate, Create	B.L-4, 5

CourseName:Principle of Programming Languages
CourseCode:BOIT-505(A)

The student will be able to:

COs	COURSE OUTCOMES	BLOOM'S TAXONOMY	BLOOM'S LEVEL (B.L)
CO-1	Develop a greater understanding of different programming methodologies, the issues involved in programming language design and implementation and programming language	Understand	B.L-1
CO-2	Develop an in-depth understanding of functional, logic, and object-oriented programming paradigms	Create	B.L-5
CO-3	Implement several programs in languages other than the one emphasized in the core curriculum (C Language & Other Languages)	Apply	B.L-2
CO-4	Use of functional programming languages like LISP, ML	Analyze	B.L-3
CO-5	Develop a greater understanding of evolution of data types, Sequence control type, methodologies, program translation process, design/implementation issues involved with variable allocation and binding	Evaluate	B.L-4

CourseName:MicroprocessorsandApplications

CourseCode:BCST601

The student will be able to:

COs	COURSE OUTCOMES	BLOOM'S TAXON	BLOOM'S LEVEL (B.L)
CO-1	Assess and solve basic binary math operations using the microprocessor and explain the microprocessor's and Microcontroller's internal architecture and its operation within	Understand	B.L-1
CO-2	Apply knowledge and demonstrate programming proficiency using the various addressing modes and data transfer instructions of the target microprocessor and microcontroller.	Apply	B.L-2
CO-3	Analyze assembly language programs; select appropriate assemble into machine across assembler utility of a microprocessor and microcontroller.	Analyze	B.L-4
C	Design electrical circuitry to the Microprocessor I/O ports in order to interface the processor to external devices.	Create	B.L.5
C	Evaluate assembly language programs and download the machine code that will provide solutions real-world control problems.	Evaluate	B.L-4

CourseName:ComputerGraphicsandMultimedia**CourseCode**

:BITT-602

The student will be able to:

COs	COURSE OUTCOMES	BLOOM'S TAXONOMY	BLOOM'S LEVEL (B.L)
CO-1	Have a basic understanding of the core concept of computer graphics.	Understand	B.L-1
CO-2	Classify and describe various Computer Graphics tools and techniques.	Apply	B.L-2
CO-3	Evaluate various Algorithms of 2D and 3D transformations on different type of objects.	Evaluate	B.L-4
CO-4	Creating a typical graphics Pipeline	Analyze	B.L-3
CO-5	Capable of using OpenGL to create interactive computer graphics.	create	B.L-5

CourseName:DataAnalytics

CourseCode:BCST-603

The student will be able to:

COs	COURSE OUTCOMES	BLOOM'S TAXONOMY	BLOOM'S LEVEL (B.L)
CO-1	Understanding the basic concepts of Probability distribution and statistics	Understand	B.L-1
CO-2	Apply the learned data analytics concepts to handle the big data problems	Apply	B.L-2
CO-3	Analyze the Hadoop map reduce and Hadoop file system	Analyze	B.L-3
CO-4	Understand and evaluate the mapping, extraction, transformation and subdividing processes for data preparation in Hadoop map reduce	Evaluate	B.L-1 B.L-4
CO-5	Apply and Create the adequate perspectives of big data analytics in various applications like recommender systems, social media applications etc	Apply, Create	B.L-2 B.L-5

CourseName:Data Mining
CourseCode:BCST-604(B)

The student will be able to:

COs	COURSE OUTCOMES	BLOOM'S TAXONOMY	BLOOM'S LEVEL (B.L)
CO-1	Understand the various data warehouse principle, concepts, association rule mining, supervised and unsupervised learning algorithm in data mining.	Understand	B.L-1
CO-2	Apply the different processing and pre-processing techniques to process the data	Apply	B.L-2
CO-3	Analyze the data warehouse architecture and its components	Analyze	B.L-3
CO-4	Evaluate the performance matrices using classification and clustering algorithm over the complex data objects	Evaluate	B.L-4
CO-5	Create skill in selecting the appropriate data mining algorithm for solving practical problems.	Create	B.L-5

CourseName:MachineLearning
CourseCode:BOIT-605(B)

The student will be able to:

COs	COURSE OUTCOMES	BLOOM'S TAXONOMY	BLOOM'S LEVEL (B.L)
CO-1	Understand the basic concepts of regression analysis, supervised and unsupervised machine learning algorithms	Understand	B.L-1
CO-2	Apply the learned concepts of machine learning to interpret the various problems	Apply	B.L-2
CO-3	Analyze the different mathematical machine learning models for various systems	Analyze	B.L-3
CO-4	Evaluate the performance of the machine learning model using measuring parameters	Evaluate	B.L-4
CO-5	Create the efficient machine learning system to solve the various real time problems	Create	B.L-5

CourseName:SystemAdministration

CourseCode:TIT-701

The student will be able to:

COs	COURSE OUTCOMES	BLOOM'S TAXONOMY	BLOOM'S LEVEL (B.L)
CO-1	Understand the Unix Operating System and the working of the built-in commands available in UNIX.	Understand	B.L-2
CO-2	Analyze the duties of the system administration in UNIX environment.	Analyze	B.L-4
CO-3	Understand and administer file permissions on directories and regular files	Understand	B.L-1
CO-4	Take appropriate measures to increase system performance	Evaluate	B.L-3
CO-5	Implement basic security measures including Accounting of resources and basic for Network Services and security measures	Create	B.L-5

CourseName:Data Warehousing and Mining
CourseCode:TIT-702

The student will be able to:

COs	COURSE OUTCOMES	BLOOM'S TAXONOMY	BLOOM'S LEVEL (B.L)
CO-1	Understand the Association rule mining, supervised and unsupervised learning algorithm in data mining	Understand	B.L-1
CO-2	Apply the different pre-processing techniques to process the data	Apply	B.L-2
CO-3	Analyze the data warehouse architecture and its components	Analyze	B.L-3
CO-4	Evaluate the performance matrices using classification and clustering algorithm over the complex data objects	Evaluate	B.L-4
CO-5	Create skill in selecting the appropriate data mining algorithm for solving practical problems.	Create	B.L-5

CourseName:InformationSecurity
CourseCode:TIT-703

The student will be able to:

COs	COURSE OUTCOMES	BLOOM'S TAXONOMY	BLOOM'S LEVEL (B.L)
CO-1	Differentiate network security and computer security.	Analyze	B.L-3
CO-2	Understand various attacks on network.	Understand	B.L-1
CO-3	Evaluate various conventional cryptography algorithms and asymmetric encryption algorithms.	Evaluate	B.L-4
CO-4	Expertise in Message authentication, Hash function and Public key encryption.	Create	B.L-5
CO-5	Apply requirements for web security and implementing security through SSL/TLS.	Apply	B.L-2

CourseName:MultiMediaCommunication
CourseCode:TIT-075

The student will be able to:

COs	COURSE OUTCOMES	BLOOM'S TAXONOMY	BLOOM'S LEVEL (B.L)
CO-1	Understand the basic concept of multimedia, hardware and tools required for generating multimedia projects.	Understand	B.L-1
CO-2	Apply the compression technique to minimise size of different multimedia files.	Apply	B.L-2
CO-3	Analyze all multimedia files of different format and apply compression techniques to get the better result.	Apply, Analyze	B.L-2,3
CO-4	Evaluate the compression ratio of multimedia message for loss less and lossy compression method	Evaluate	B.L-4
CO-5	Create the multimedia projects for the usability of different industries.	Create	B.L-5

CourseName:EntrepreneurshipDevelopment Programme

CourseCode:TOE-05

The student will be able to:

COs	COURSE OUTCOMES	BLOOM'S TAXONOMY	BLOOM'S LEVEL (B.L)
CO-1	Develop & understand the fundamental concepts of Entrepreneur.	Understand, Apply	B.L-1,2
CO-2	Relate, discuss, understand, and present accounting concepts, cost concepts.	Analyze	B.L-3
CO-3	Evaluate the knowledge and understanding of various Laws concerning entrepreneur.	Evaluate	B.L-4
CO-4	Understand the project cost and financial report.	Understand	B.L-1
CO-5	Understand how to create Balance Sheet.	Understand, Create	B.L-1,5

CourseName:SoftwareArchitecture

CourseCode:TIT-801

The student will be able to:

COs	COURSE OUTCOMES	BLOOM'S TAXONOMY	BLOOM'S LEVEL (B.L)
CO-1	Understand the architecture, creating it and moving from one to any, different structural patterns.	Understand	B.L-1
CO-2	Learn about behavioral patterns.	Apply	B.L-2
CO-3	Analyze the architecture and build the system from the components.	Analyze	B.L-3
CO-4	Evaluate the coming attractions in software architecture research and practice	Evaluate	B.L-4
CO-5	Design creational and structural patterns.	Create	B.L-5

CourseName: CryptographyandNetwork Security

CourseCode:BIIT-802

The studentwillbeable to:

COs	COURSE OUTCOMES	BLOOM'S TAXONOMY	BLOOM'S LEVEL (B.L)
CO-1	Understand various attacks andneedofcryptography	Understand	B.L-1
CO-2	Applyvarioussubstitutionandtranspositionciphersfor securinga message.	Apply	B.L-2
CO-3	Analyze the needand functioningof various blockciphers	Analyze	B.L-3
CO-4	Understandandcreatevariouspublickeyalgorithmfor securingthe message	Understand, Create	B.L-1, B.L-5
CO-5	Evaluate how to maintain the Confidentiality, Integrity and Availability ofa data	Evaluate	B.L-4

CourseName:ITInfrastructureManagement

CourseCode:TIT081

The student will be able to:

COs	COURSE OUTCOMES	BLOOM'S TAXONOMY	BLOOM'S LEVEL (B.L)
CO-1	Understand the business value and processes of ICT services in an organization and apply that knowledge and skill with initiative to a workplace scenario	Understand, Apply	B.L-1,2
CO-2	Apply the technical and communication skills that contribute to the operation of ICT services in an organization	Apply	B.L-2
CO-3	Remember how effective IT Infrastructure Management requires strategic planning with alignment from both the IT and business perspectives in an organization	Understand	B.L-1
CO-4	Critically analyse and evaluate the impact of new and current ICT services to an organization	Analyze, Evaluate	B.L-3,4
CO-5	Evaluate the theoretical, technical and management issues that deliver ICT services to an organization	Evaluate	B.L-4

CourseName:DistributedComputing

CourseCode:TIT-087

The student will be able to:

COs	COURSE OUTCOMES	BLOOM 'S TAXONO	BLOOM'S LEVEL (B.L)
CO 1	Study software components of distributed computing systems. Know about the communication and interconnection architecture of multiple computer systems.	Understand	B.L-1
CO 2	Recognize the inherent difficulties that arise due to distributed-ness of computing resources. Understanding of networks & protocols, mobile & wireless computing and their applications to real world problems.	Understand, Evaluate	B.L-1,4
CO 3	At the end students will be able to apply the knowledge to design, implement distributed system	Apply, Create	B.L-2,5
CO 4	Analyze the Cloud computing setup with its vulnerabilities and applications using different architectures	Analyze	B.L-3
CO 5	Define Cloud Computing and memorize the different Cloud service and deployment models	Understand, Analyze	B.L-1,3